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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,660	11/27/2001	Toshio Sakai	OHTN:011	8055

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT

PAPER NUMBER

1774

DATE MAILED: 03/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-4

Office Action Summary

Application No.

09/993,660

Applicant(s)

SAKAI ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

1. The disclosure is objected to because of the following informalities:

The tables on pages 11, 13 and 14 include non-English language characters in the upper left corner. Some of the chemical formulae in these tables are also not clearly readable (in particular, many subscripts are unreadable).

Appropriate correction is required.

2. Claims 8 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8: R^2 to R^{17} are not defined. Perhaps " R^1 and R^{18} " should read -- R^1 to R^{18} -- in the first line after formula (3).

Claim 11: The limitations imposed by the requirement that the bis-condensed aromatic cyclic compound be a compound "inactive to other compounds present in the organic light emitting layer" are not clear. It is not clear what is meant by "inactive to other compounds". It is also not clear if claim 11 requires the bis-condensed aromatic cyclic compound to be in the organic light emitting layer. Claim 1, from which claim 11 depends, does not require the bis-condensed aromatic cyclic compound to be in the light emitting layer.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6, 8, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US 5,635,308).

See the whole patent. In particular, see column 1, line 66-c. 3, l. 37, the specific formulae set forth in c. 7-30, c. 30, l. 46-c. 31, l. 3, and c. 32, l. 50-54.

Inoue et al. disclose organic electroluminescent (EL) devices comprising a phenylanthracene derivative in the light emitting layer of the device. The phenylanthracene derivatives are bis-condensed aromatic cyclic compounds that are bisanthracene compounds.

As taught at c. 30, l. 46-c. 31, l. 3, another luminescent material may be used in the light emitting layer in combination with a phenylanthracene derivative. This additional luminescent material meets the limitation of a light emitting material as required by claims 1-4, 6, 8, 9 and 11. In addition, the phenylanthracene derivatives themselves are light emitting materials and meet the limitations of the light emitting material as required by claims 1-4, 6, 8, 9 and 11.

Various of the formulae set forth in c. 7-30 of the prior art represent compounds that meet the limitations of a compound represented by general formula (2) as defined in claim 6 while others represent compounds that meet the limitations of a compound represented by general formula (3) as defined in claim 8 (presuming "R¹ and R¹⁸" should read --R¹ to R¹⁸-- in claim 8).

5. Claims 1-5, 8, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakai et al. (EP 0 836 366 A1).

Sakai et al. disclose organic electroluminescent (EL) devices. Sakai et al. disclose various bis-condensed aromatic cyclic compounds for use in the light emitting layer of the device. For example, see formulae (3)-(6), (14)-(16), (32)-(36), (45), (51)-(54) and (56)-(59) on pages 12-31. One or more of these compounds may be used in combination with one or more fluorescent substances in the light emitting layer. For example, see p. 32, l. 45-53.

The one or more fluorescent substances meets the limitation of a light emitting material as required by claims 1-4, 8 and 11. In addition, the bis-condensed aromatic cyclic compounds themselves are light emitting materials and meet the limitation of a light emitting material as required by claims 1-4, 8, 9 and 11.

Each of the formulae referenced above represents a compound meeting the limitations of a compound represented by general formula (1) as set forth in claim 5.

Of the formulae referenced above, each of formulae (5), (6), (15), (34), (36) and (53) represents a bisanthracene compound as required by claim 4. Each of formulae (6), (34), (36) and (53) further represents a compound meeting the limitations of a compound represented by general formula (3) as set forth in claim 8 (presuming "R¹ and R¹⁸," should read --R¹ to R¹⁸--).

With respect to the thickness limitation of claim 3, see the prior art at p. 37, l. 31-37 and p. 38, l. 12-13.

With respect to the "inactive to other compounds" limitation of claim 11, see the prior art at p. 33, l. 11-25.

Art Unit: 1774

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 5,635,308) as applied to claims 1-4, 6, 8, 9 and 11 above, further in view of Hosokawa et al. (US 5,536,949).

Inoue et al. disclose EL devices and teach the use of phenylanthracene derivatives such as those of present general formula (2) or (3) as light emitting materials in the light emitting layer. Inoue et al. teach that the phenylanthracene derivatives may be used in combination with each other and may be used as host materials in combination with other light emitting materials such as styryl series dyes. Inoue et al. also teach that the phenylanthracene derivatives may be used in mixtures with aromatic tertiary amines having hole injecting/transporting properties.

Inoue et al. do not explicitly teach combining a phenylanthracene derivative such as those of present general formula (2) or (3) with a light emitting material of general formula (1) as set forth in claim 5, with claims 7 and 10 dependent from claim 5.

Hosokawa et al. disclose compounds that meet the limitations of a compound of general formula (1) as set forth in claim 5. Some of the compounds are disclosed for use as a host material in the light emitting layer of an EL device while others are disclosed for use as charge injection auxiliary materials capable of enhancing charge injection properties and also

functioning as a fluorescent dopant. Hosokawa et al. teach that an organic EL device having a light emitting layer in which a slight amount of one or more of the charge injection auxiliary materials is dispersed in a host material requires lower applied voltage and exhibits enhanced luminous efficiency and prolonged service life. For example, see the abstract, column 3, lines 46-67, c. 4, l. 22-c. 11, l. 22, the last formula in c. 13-14, the penultimate formula in c. 17-18, c. 25, l. 50-54, c. 26, l. 59-c. 27, l. 2 and c. 27, l. 28-c. 36, l. 38. The charge injection auxiliary materials represented by the last formula in c. 13-14 and the penultimate formula in c. 17-18 meet the limitations of a compound represented by general formula (1) as defined in claim 5, and other charge injection auxiliary materials meeting the limitations of a compound represented by present general formula (1) are suggested by Hosokawa et al. Various of the formulae set forth in c. 31-36 for Hosokawa's host materials also represent compounds meeting the limitations of a compound represented by general formula (1) as defined in claim 5.

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a charge injection auxiliary material as taught by Hosokawa et al. as a dopant in Inoue's organic EL device. One of ordinary skill in the art would have been motivated to use Hosokawa's charge injection auxiliary material as a dopant in Inoue's EL device by Hosokawa's teachings that the use of the charge injection auxiliary material as a dopant in a light emitting layer of an organic EL device improves device performance such as lowering the voltage required for device operation, enhancing luminous efficiency and prolonging service life. One of ordinary skill in the art would have reasonably expected that Hosokawa's charge injection auxiliary materials would be suitable dopants for a light emitting layer comprising a

phenylanthracene derivative based on the teachings of the Inoue patent. In particular, Hosokawa's exemplary charge injection auxiliary materials include compounds that emit blue light and that generically are tertiary aromatic amines as well as styryl series compounds.

Further, it would have been a *prima facie* obvious modification to one of ordinary skill in the art at the time of the invention to utilize light emitting materials such as the host compounds disclosed by Hosokawa in combination with Inoue's phenylanthracene derivatives in the light emitting layer of an EL device. The combination of two known materials, known to be suitable for the same purpose, is considered to be *prima facie* obvious.

8. Miscellaneous:

In view of the definition of "L" for general formula (2) in claims 6 and 7 (and in the specification), there should apparently be a subscript 2 after the large closing parenthesis.

In the second line after formula (3) in claim 8, the examiner suggests using the term --hydroxy-- instead of "hydroxyl" because technically, "hydroxyl" refers to the -OH group in an inorganic compound.

As a grammatical correction, the examiner suggests changing "a same" to --the same-- in line 2 of claim 9.

9. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

Art Unit: 1774

The current fax numbers for Art Unit 1774 are (703) 872-9311 for official after final faxes and (703) 872-9310 or (703) 305-5408 for all other official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY
03/03/03



**MARIE YAMNITZKY
PRIMARY EXAMINER**

1774